

REMARKS

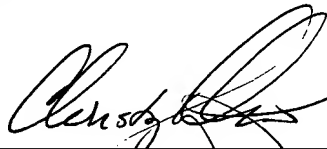
The claims now pending in the present application are Claims 1 to 8, the independent claims being Claims 1, 5 and 7.

The specification and Abstract of the Disclosure have been amended to improve their form. No new matter has been added.

Applicant submits that the present application is in allowable form. Favorable consideration of the application and early passage to issue respectfully are requested.

Applicant's undersigned attorney may be reached in our Washington, D.C. office by telephone at (202) 530-1010. All correspondence should continue to be directed to our below listed address.

Respectfully submitted,



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VERSION WITH MARKS TO SHOW CHANGES MADE TO SPECIFICATION

Please substitute the paragraph starting at page 1, line 22 and ending at page 2, line 1 with the following replacement paragraph.

--Referring to Fig. 6, an optical system is separated into [to] right and left sections at the end adjacent to an object, and adapted to admit a [only] right beam or a left beam of light, respectively, by the function of liquid crystal shutters 81R and 81L disposed on the right and left sides, respectively.--

Please substitute the paragraph starting at page 2, line 2 and ending at line 7, with the following replacement paragraph.

--The beams of light are merged into a single beam of light by mirrors 82R, 82L, and 83, and pass through a stop 84 so as to be formed into an image at an image pick-up device 88 through lenses 85, 86, and 87. At a given timing, only one of the right and left beam of light reaches an imaging surface.--

Please substitute the paragraph starting at page 2, line 8 and ending at line 11,
with the following replacement paragraph.

--A picture signal obtained by photoelectrically converting the beam of light
formed into an image on the imaging surface as described above is recorded onto [to] a recording
medium.--

Please substitute the paragraph starting at page 2, line 12 and ending at line 15,
with the following replacement paragraph.

--Among several different types of information involved in [the] stereoscopic
photography, there are some types of information required to view a stereoscopic image [further]
properly at the stage of display.--

Please substitute the paragraph starting at page 3, line 2 and ending at line 3,
with the following replacement paragraph.

--(5) Distance to a subject (Value measured by a ranging system, such as an AF
system).--

Please substitute the paragraph starting at page 3, line 7 and ending at line 9, with the following replacement paragraph.

--The various types of information mentioned above are distributed among [owned by] an optical unit (lens unit) and a photographing unit (the main unit of a camera) as follows:--

Please substitute the paragraph starting at page 5, line 2 and ending at line 9, with the following replacement paragraph.

--However, in the conventional photographing and recording apparatus described above, the above-mentioned information is not recorded onto [to] a recording medium wherein images have been recorded, thus presenting a problem in that only the recording medium to which images have been merely recorded is handed to a third party, and good three dimensional images cannot always be reproduced if the images are viewed at an improper setting.--

Please substitute the paragraph starting at page 5, line 22 and ending at page 6, line 6, with the following replacement paragraph.

--To this end, according to one aspect of the present invention, there is provided a stereoscopic photographing lens unit that is mounted on a camera main unit, and has a first photographing optical axis and a second photographing optical axis, the stereoscopic photographing lens unit having control means for controlling a photographing optical system, and transmitting means for transmitting predetermined information of the photographing optical system, including control information provided by the control means, to the camera main unit.--

Please substitute the paragraph starting at page 6, line 7 and ending at line 22, with the following replacement paragraph.

--According to another aspect of the present invention, there is provided a stereoscopic photographing apparatus that has a first photographing optical axis and a second photographing optical axis, and that switches picture signals for the left eye and right eye, respectively, for each field through the intermediary of the respective photographic optical axes before inputting an image. The [,the] photographing apparatus includes [including] control means for controlling a photographing optical system and recording means for recording predetermined information of the photographing optical system, including control information provided by the control means, and information regarding whether the odd/even field of an input picture signal corresponds to a picture signal for the left eye or the right eye to a recording

medium in the form of digital values, together with picture signals or picture signals and speech signals.--

Please substitute the paragraph starting at page 10, line 20 and ending at line 22, with the following replacement paragraph.

--In this embodiment, a base line length d is fixed (see Fig. 1), and stored beforehand in a memory, which is a recording medium in the MCU 291; hence, the same value will always be output.--

Please substitute the paragraph starting at page 12, line 8 and ending at line 19, with the following replacement paragraph.

--A recorder microcomputer 91 communicates with a lens microcomputer 29. Through this [the] communication, the recorder microcomputer 91 receives [the] information regarding the angles of convergence, focal lengths, and base line lengths from the lens microcomputer 29. Among these [the] pieces of information, [the] information regarding the focal lengths is converted into [the] information regarding the angles of view on the basis of the screen size of an image pick-up device. These pieces of information are transmitted to a

processing circuit of a recorder unit, and recorded onto [to] a recording medium (magnetic tape)
42 so that they are arranged side by side with [to] picture signals or speech signals.--

Please substitute the paragraph starting at page 12, line 20 and ending at line
22, with the following replacement paragraph.

--The recorded information is read out together with picture or speech signals
during reproduction, and output externally [outside].--

Please substitute the paragraph starting at page 12, line 23 and ending at page
13, line 2, with the following replacement paragraph.

--The signals are supplied to a reproducing device (display device) 5 in a
state[,] wherein they are arranged side by side with [to] picture signals or speech signals, so as to
be used as the information for achieving proper stereoscopic image display.--

Please substitute the paragraph starting at page 13, line 3 and ending at line 7,
with the following replacement paragraph.

--In this embodiment, the focal length of a zoom lens ranges from 5 to 15 mm, and a 1/3-inch CCD is employed. The angle of view can be horizontally varied from 67 to 25 degrees, the base line length is fixed at [to] 70 mm, and the angle of convergence can be varied from 0 to 3 degrees.--

Please substitute the paragraph starting at page 13, line 8 and ending at line 11, with the following replacement paragraph.

--Information [The information] regarding whether the odd or even fields of picture signals input by switching for each field correspond to the picture signals for left eye or right eye is recorded onto [to] the recording medium 42.--

Please substitute the paragraph starting at page 13, line 12 and ending at page 14, line 8, with the following replacement paragraph.

--Thus, according to the present embodiment, first information regarding the focal length of a photographing optical system, second information regarding the base line length indicating the interval between the incident optical axes of a first photographing optical axis and a second photographing optical axis, and third information regarding the angle of convergence formed by the incident optical axes of the first photographing optical axis and the second

photographing optical axis are transmitted in digital values to the main unit of a camera from the stereoscopic photographing lens unit that is mounted on the main unit of a camera, has the first photographing optical axis and the second photographing optical axis for left eye and right eye, respectively, and forms right and left parallaxes. The foregoing three types of information, which have been transmitted, and [the] information regarding whether the odd or even fields of input picture signals correspond to the picture signals for left eye or right eye are recorded together with picture signals and speech signals in the form of digital values on [to] a recording medium. It is possible, therefore, to make a proper setting for reproduction and display, permitting [allowing] good stereoscopic images to be reproduced.--

Please substitute the paragraph starting at page 14, line 9 and ending at line 14, with the following replacement paragraph.

--In this case, ideally, these pieces of information are stored in the same recording medium in which the information regarding photographed images is stored. For this purpose, recent digital image storing systems can be used, because they permit various types of information, including images and voice/sounds [speeches], to be digitized and recorded.--

Please substitute the paragraph starting at page 14, line 16 and ending at line 20, with the following replacement paragraph.

--Fig. 4 shows the configuration of a photographing system according to a second embodiment. The photographing system constitutes [is constructed by] a digital animation photographing, recording, and reproducing apparatus, i.e., a "digital video camera" and reproducing device (display device).--

Please substitute the paragraph starting at page 15, line 11, and ending at line 15, with the following replacement paragraph.

--Reference numeral 4 denotes a recorder unit that permits recording of speech/sound signals that have been converted into digital values (not shown) or several pieces of digital information arranged side by side in addition to the foregoing digital picture signals.--

Please substitute the paragraph starting at page 15, line 16 and ending at page 16, line 2, with the following replacement paragraph.

--A recorder microcomputer 91 communicates with a lens microcomputer 29. Through this [the] communication, the recorder microcomputer 91 receives [the] information regarding the angles of convergence, focal lengths, and base line lengths from the lens microcomputer 29. Among these [the] pieces of information, [the] information regarding the focal lengths is converted into [the] information regarding the angles of view on the basis of the

screen size of an image pick-up device. These pieces of information are transmitted to a processing circuit of a recorder unit, and recorded onto [to] a recording medium (magnetic tape) 42 so that they are arranged side by side with [to] picture signals or speech/sound signals.--

Please substitute the paragraph starting at page 16, line 3 and ending at line 5, with the following replacement paragraph.

--The recorded information is read out together with picture or speech/sound signals during reproduction, and output externally [outside].

Please substitute the paragraph starting at page 16, line 6 and ending at line 10, with the following replacement paragraph.

--The signals are supplied to a reproducing device (display device) 5 in a state[,] wherein they are arranged side by side with [to] picture signals or speech/sound signals, so as to be used as [the] information for achieving proper stereoscopic image display.--

Please substitute the paragraph starting at page 16, line 11 and ending at line 15, with the following replacement paragraph.

--As in the case of the foregoing embodiment, [the] information regarding whether the odd or even fields of picture signals input by switching for each field correspond to the picture signals for left eye or right eye is recorded on [to] the recording medium 42.--

Please substitute the paragraph starting at page 16, line 16 and ending at line 19, with the following replacement paragraph.

--Thus, according to the present embodiment, the same advantages as those of the first embodiment can be obtained also in a [the] photographing apparatus combined with a photographing lens unit into one piece.--

Please substitute the paragraph starting at page 16, line 21 and ending at page 17, line 1, with the following replacement paragraph.

--Figs 5A to 5C show [Fig. 5 shows] the configuration of a photographing system according to a third embodiment. The system is adapted to photograph and record stereoscopic images by employing two synchronized [two] cameras. In this system, the angle of convergence remains unchanged (parallel or zero degree), while the base line length is variable.--

Please substitute the paragraph starting at page 17, line 9 and ending at line 12, with the following replacement paragraph.

--The two sets of cameras are mounted on a single rail 18 such that the right unit is fixed, while the left unit is slidable on the rail to move in the directions of the arrows shown in Fig. 5B [5].--

Please substitute the paragraph starting at page 18, line 11 and ending at line 15, with the following replacement paragraph.

--The above three types of information are transmitted to a microcomputer of a recorder 91, and digitally recorded onto [to] a recording medium 42 by a recording circuit 41 together with picture signals or speech/sound signals (not shown), etc., output from the synthesizing circuit 32.--

Please substitute the paragraph starting at page 18, line 16 and ending at line 18, with the following replacement paragraph.

--The recorded information is read out together with picture or speech/sound signals during reproduction, and output externally [outside].--

Please substitute the paragraph starting at page 18, line 19 and ending at line 23, with the following replacement paragraph.

--In this embodiment, the focal length of a lens is fixed at [to] 10 mm, and a ½-inch CCD is employed. Hence, the angle of view is horizontally fixed at [to] 53 degrees, the base line length can be varied from 70 to 140 mm, and the angle of convergence is zero degrees.-

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Please substitute the paragraph starting at page 18, line 24 and ending at page 19, line 3, with the following replacement paragraph.

--Information [The information] regarding whether the odd or even fields of picture signals input by switching for each field correspond to the picture signals for left eye (left side) or right eye (right side) is recorded onto [to] the recording medium 42.--

Please substitute the paragraph starting at page 19, line 4 and ending at line 10, with the following replacement paragraph.

--Thus, according to the present embodiment, the same advantages as those of the first and second embodiments can be obtained also in the photographing system for recording

picture signals simultaneously input by the right-eye photographing apparatus and the left-eye photographing apparatus to a recording medium by switching the picture signals for each field.--

Please substitute the paragraph starting at page 19, line 11 and ending at line 19, with the following replacement paragraph.

--As described above, according to the first through third embodiments, the details of stereoscopic conditions are sequentially recorded onto [to] a recording medium, so that the information can be retained and transmitted, allowing further proper reproduction of stereoscopic images by using the information when reproducing and displaying the stereoscopic images. Thus, the present invention provides an advantage in that good stereoscopic images can be always reproduced.--

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